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(21) International Application Number: PCT/DK00/00204 (22) International Filing Date: 19 April 2000 (19.04.00) (30) Priority Data: PA 1999 00562 23 April 1999 (23.04.99) DK (71) Applicant (for all designated States except US): SCHUR PACKAGING SYSTEMS A/S [DK/DK]; Fuglevangsvej 41, DK-8700 Horsens (DK). (72) Inventor; and (75) Inventor/Applicant (for US only): HANSEN, Erik, J. [DK/DK]; Askevej 8, DK-8700 Horsens (DK). (74) Agent: K. SKØTT-JENSEN PATENTINGENIØRER A/S; Lemmingvej 225, DK-8361 Hasselager (DK).		(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>In English translation (filed in Danish).</i> <i>Without international search report and to be republished</i> <i>upon receipt of that report.</i>
(54) Title: METHOD AND APPARATUS FOR PACKAGING PRINTED ARTICLES SUCH AS NEWSPAPERS IN SHEET WRAPPERS (57) Abstract <p>For individual foil packaging of newspapers which are delivered from a rotary printing press with high capacity, the newspapers are fed hanging down from a gripping conveyor which bring the newspapers to fall down into a V-shaped gap between two foil webs (22, 24), which in brought-together condition in under a retaining pressure belt (10) are thereafter fed for partial circulation around a drum element (8). The foils are fed at such a speed that a certain small interval will arise in between the newspapers arriving successively between the two webs. The drum element (8) is configured with integrated welding jaws (36), the movement of which is synchronised within said interval for carrying out transverse welding of the foil webs in between the items, and outer welding rollers (42) effect a longitudinal welding along the side edges of the webs. The webs are cut through along the transverse welds by means of operable co-rotating knives on the drum element, and in their passage of a reversing roller (14) for the retaining pressure belt (10), the now individually-packaged items are discharged to a conveyor for further transport.</p>		

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**Method and apparatus for packaging printed articles
such as newspapers in sheet wrappers.**

The present invention concerns a method and an ap-
5 paratus for the foil packaging of newspapers and similar
printed articles which e.g. are fed from a rotary printing
press with high capacity. It is known to carry out such a
packaging in the formation of stacks of newspapers from which
the newspapers can be fed through a packaging station with
10 considerably smaller capacity, but with the invention it is
aimed at carrying out the operation on an in-line basis, e.g.
with a capacity of 25-30,000 items per hour, i.e. up to 10
items per second.

Relevant machines which can operate with more or
15 less high capacity have already been proposed, cf. e.g. DE 38
38 985, US 4,683,708 and JP-A-110 70913, but still with ar-
rangements for the group-handling of newspapers to make it
possible for these to be handled in an intermittent manner,
with a necessary consumption of time in association herewith.
20 The machines hereby become relatively complicated and expen-
sive.

It is an object of the present invention to provide
a method of packaging whereby a regular flow-packaging of the
printed articles can be achieved in a relatively simple man-
25 ner, i.e. where these are fed in a fully continuous manner
through a packaging arrangement inserted in the item flow.

According to the invention, this can be achieved by
the execution of the method as disclosed and characterised in
claim 1. Despite a high feeding rate, the printed articles
30 will hereby be subject to a certain "period of rest" against
a relatively firm supporting surface in the plant, i.e. the
surface of the drum, which in a simple co-rotating manner can
present the necessary tools respectively for a transverse
welding together of the opposing webs of packaging foil bet-

ween the successively-fed printed articles, and a cutting through of the relevant connection areas. It is herewith taken into consideration that the period of time available for which the items are retained on the surface of the drum will
5 be rather brief with the passage of an item on the drum with minimised diameter due to the relatively high rate of feed, so that there will hardly be time for carrying out an otherwise conventional thermal cutting-through of the packaging in connection with the weld closing of the respective ends of
10 the items. These packaged items can thus still be delivered as fully separated items when working with an active cutting through, preferably by use of co-rotating knives on the drum.

An associated side-closing of the foil packages will be easier to achieve, since such a closing can be established by a roller welding at any place in the feeding path,
15 though preferably in connection with the passage of the items on the drum.

In the following, the invention is explained in more detail with reference to the drawing, in which

20 fig. 1 is a schematic side view of a machine according to the invention,

fig. 2 is a sectional view of a feeding drum used herein, and

25 fig. 3 is a perspective view of a set of tools housed in the drum .

In fig. 1 it is shown that folded newspapers 2 are fed hanging down in a gripping conveyor 4, possibly directly from a rotary printing press. At the point A they are released to fall freely down to an underlying packaging machine 6.
30

As its main components, this machine has a drum element 8 with a pressure belt 10 which runs over rollers in the form of a feed-in roller 12, a feed-out roller 14 and a pair of outer return rollers 16, and bearings 18 for supply

rollers 20 for two packaging foil webs 22 and 24, which via uppermost, mutually separated rollers 26 directly under the point A are guided downwards in V-formation to run on the feed-in roller 12 under pressure from a counter-pressure roller 28, after which the webs which are now brought together are fed around the drum 8 in under the pressure belt 10 or band corresponding hereto. After a lower pressure roller 30, the webs are conveyed as a packaged product 32 out over conveyor 34 leading away from the plant.

The drum 8 is configured with a number of longitudinal welding jaws 36 with a distance along the periphery of the drum corresponding to slightly more than the hanging extent of the newspapers 2. A counter-pressure roller 40 or several of such rollers can if necessary create increased welding pressure in against the drum. For the welding in the feeding direction of the webs 22,24, one or more welding wheels 42 are arranged at both sides outside the pressure belt 10.

During operation, the newspapers will successively fall down in the upper V-space between the foil webs 22 and 24, in that the rate of feed is adjusted in such a manner that there will arise a free interval between the descending newspapers, e.g. in the order of 5 cm. The newspapers are clamped in between the foil webs and via the roller 12 pass down to run around the drum 8. This is carefully synchronised in order to achieve that the said interval between the newspapers will come to lie directly opposite the welding jaws 36, which can therefore possibly project slightly out from the drum, possibly in a movable manner. In connection with the passage of one or more outer pressure rollers 40, or possibly inwardly-pressing spring systems, this will make it possible for the two foil webs to be held together and herewith welded together in the said interval. In a corresponding manner it will be possible to arrange a cutting-through

of the webs along the weld, e.g. by means of knife element projected out from the drum and possibly moved longitudinally. In connection with a welding together of a double foil web, it is well-known that a cutting-through can be effected
5 by thermal melting, but because of the high working speed and the arising operating conditions, with the known apparatus it cannot be assumed as a matter of course that such a weld distribution can be achieved in a reliable manner. Correspondingly, with the invention it applies that there is no basic
10 condition that an absolutely tight welding-in of the newspapers shall be achieved, i.e. interruptions in the welding lines will be acceptable, providing merely however that the packaging holster is suitably closed along the edges in order to cover and surround the contents.

15 The welding wheels 42 will serve to provide side-edge closures of the passing holsters, and these wheels will have better conditions for creating regular welding-together lines, in that they work outside that area where the thickness of the assembled web varies appreciably during the passing of the newspapers and respectively the said interval
20 between them.

The result will be that the end products designated 32 will consist of individually holster-packaged newspapers, which are delivered to the conveyor 34 in the same number per
25 period of time as that at which the newspapers arrive on the gripping conveyor 4. It can hereby be natural that the products are laid out on the conveyor in a scale-like manner, and the conveyor can thus work with a lower transport speed. Suitable controlling and damping means can be placed at the
30 discharge from discharge roller 30.

When the apparatus as indicated includes reserve supply rollers for the foil webs, it will be a simple operation to carry out a change of rollers when the operative roller is about to become empty, in that a welding of the new

foil web to the preceding web can thus be effected. To the extent that this takes time with a stopping of the apparatus, the dropping of the newspapers at A can be suspended until the apparatus is operative again, and the hereby surplus
5 newspapers can be collected together for delivery in the non-packaged state .

In figs. 2 and 3 it is shown that the welding jaws 36 can be disposed on mutually separate support rails 44 which are locally connected by means of yoke pieces 46 extending inwardly in the drum 8. If desired, the jaws can thus be
10 movable radially in relation to the drum, e.g. by connection to a control cylinder 48. In between the jaws 36, 44 there is housed a knife beam 50 with a protruding, serrated knife blade 52 which, e.g. by means of control cylinders 54, will
15 be displaceable outwards for the cutting-over of the foil 22,24 centrally between the welds which are effected by the welding jaws 36. This displacement with subsequent retraction should be effected just before the arrival at the discharge roller 30, i.e. by a quite fast operation, and therefore it
20 can be preferred to replace the cylinders 54 with e.g. cam-controlled push-rods. It can also be a possibility to use a knife which can be moved axially.

C L A I M S

1. Method for the foil packaging of newspapers and
5 similar printed items which are fed with great capacity e.g.
from a rotary printing press, c h a r a c t e r i s e d in
that the items are fed in the hanging down position by means
of a gripping conveyor which brings the items to fall down in
10 a V-shaped gap between two opposite, moving foil webs which
are broader than the items, and which are fed further in
clamped-together condition with the printed items lying seri-
ally between the webs and with a short interval between them,
in that the webs are fed partly around a rotating drum ele-
ment in under a retaining pressure belt along a welding sec-
15 tion, where while being pressed against the belt from the
outside they are subjected to a welding-together in the
transverse areas between the items and in the longitudinal
edge areas outside the items, after which the items thus
packaged are separated at the said transverse areas, prefera-
20 bly by means of co-rotating, operable knife elements on the
drum element and during continued clamping between the drum
element and said retaining pressure belt, in that in their
passage of a reversing roller for the retaining pressure belt
the items are released for delivery to conveyor means for
25 further transport.

2. Method according to claim 1, c h a r a c t e r i
s e d in that the said transverse welds are carried out by
means of co-rotating welding jaws on the drum element.

3. Apparatus for the execution of the method ac-
30 cording to claim 1, c h a r a c t -
e r i s e d in that its main component part consists of a
drum element (8) configured with co-rotating, axially-
extending welding jaws, preferably in combined configuration
with operable knife elements, and that it further comprises

feeding rollers for a retaining pressure belt (10) which presses in against the surface of the drum along an appreciable segment of same, and feeding means for the delivery of two opposite foil webs (22,24) via a V-shaped item-delivery sequence for circulation around said drum element along said segment, and means for longitudinal welding together of said foil webs along their outer edges.

4. Apparatus according to claim 3, c h a r a c t e r i s e d in that said knife elements consist of knife beams which can be displaced radially and which are provided with protruding, serrated knife blades.

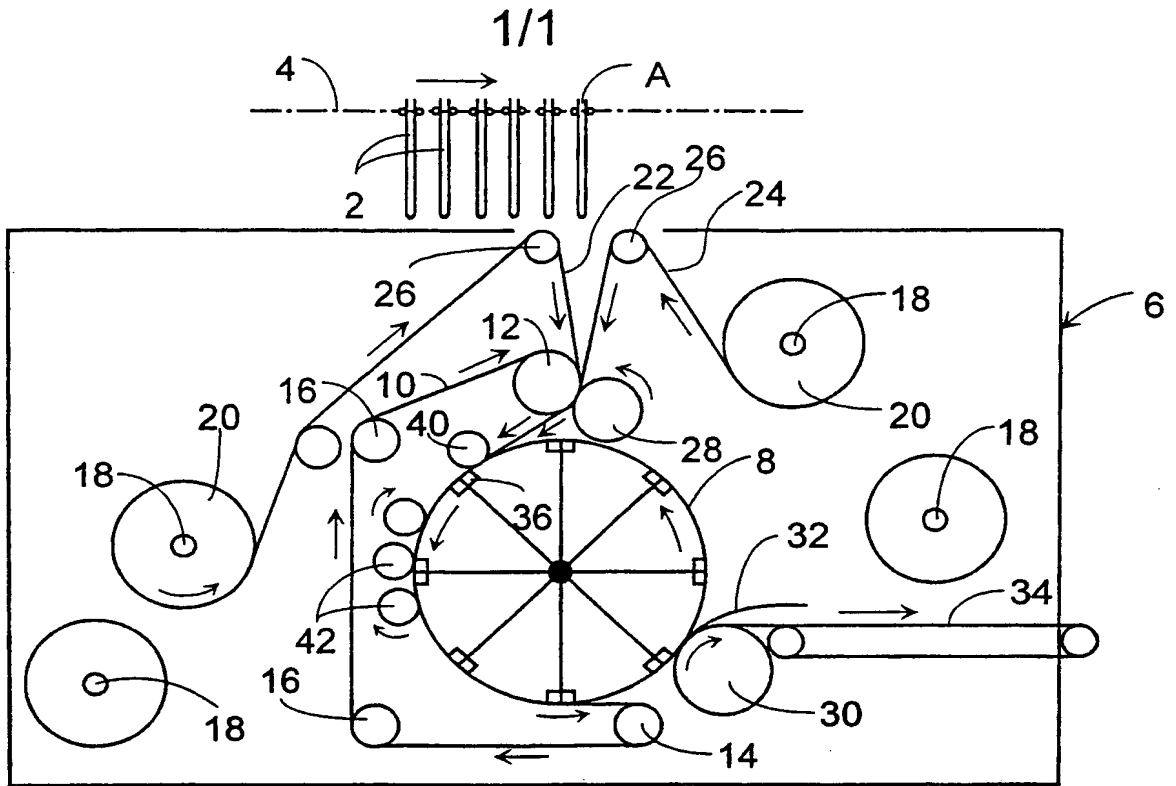


Fig.1

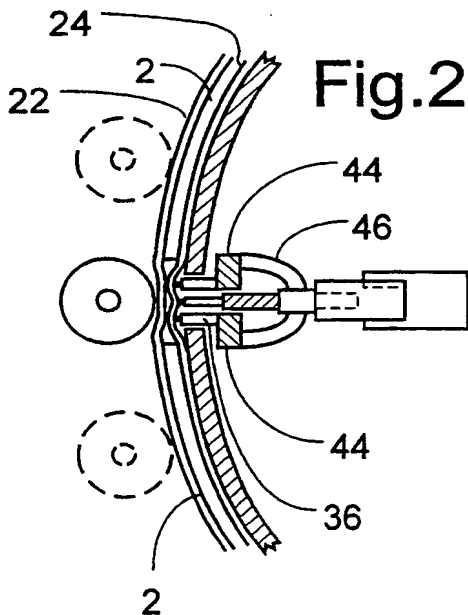


Fig.2

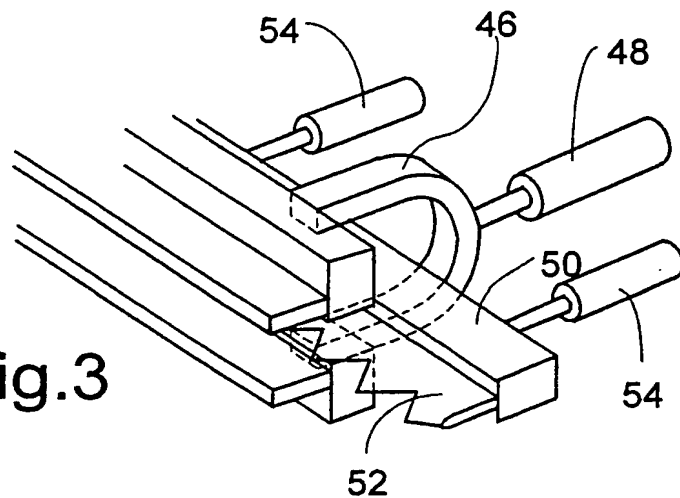


Fig.3

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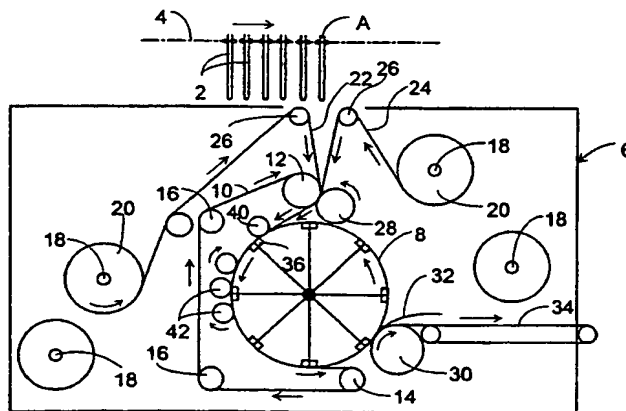
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(54) Title: METHOD AND APPARATUS FOR PACKAGING PRINTED ARTICLES SUCH AS NEWSPAPERS IN SHEET WRAPPERS



(57) Abstract: For individual foil packaging of newspapers which are delivered from a rotary printing press with high capacity, the newspapers are fed hanging down from a gripping conveyor which bring the newspapers to fall down into a V-shaped gap between two foil webs (22, 24), which in brought-together condition in under a retaining pressure belt (10) are thereafter fed for partial circulation around a drum element (8). The foils are fed at such a speed that a certain small interval will arise in between the newspapers arriving successively between the two webs. The drum element (8) is configured with integrated welding jaws (36), the movement of which is synchronised within said interval for carrying out transverse welding of the foil webs in between the items, and outer welding rollers (42) effect a longitudinal welding along the side edges of the webs. The webs are cut through along the transverse welds by means of operable co-rotating knives on the drum element, and in their passage of a reversing roller (14) for the retaining pressure belt (10), the now individually-packaged items are discharged to a conveyor for further transport.

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☒ Patent family members are listed in annex.

***&** document member of the same patent family

27. 10. 00

M. Arvidsson/GH

INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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